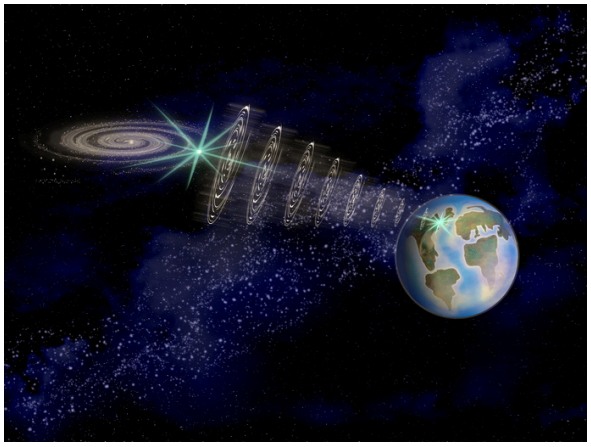
Will AI help us find aliens?

Machine learning detects promising radio signals in the search to find life beyond our solar system.

FUNDAMENTAL RESEARCH



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Who's out there? Scientists involved in the search for extraterrestrial intelligence (SETI) have been looking for proof of intelligent beings since the 1960s.

Now they're getting some valuable assistance. AI has spotted eight previously undetected signals of interest using data collected at an observatory in the United States. The search is part of the Breakthrough Listen Initiative – the largest scientific research programme for uncovering evidence of alien civilizations.

Finding the needle in a haystack of signals

Detecting these new signals from space required quite an effort led by researchers from the University of Toronto in Canada and the SETI Institute, a non-profit research organisation located in California's Silicon Valley tasked with searching for and understanding life beyond Earth. They observed 820 nearby stars and analysed 150 terabytes of data to identify about 3 million signals of interest. The team then examined 20 515 signals to come up with these eight technologically generated signals, or technosignatures. Back in 2017, the data was searched using traditional methods, but no interesting signals were found. The present findings were published in the journal 'Nature Astronomy'.

Most signals detected by telescopes originate from mobile phones, GPS satellites and TV stations. So how do you distinguish radio signals in space from human-generated interference here on Earth? The researchers trained the AI to not confuse the two.

"We're scaling this search effort to 1 million stars today with the MeerKAT telescope

and beyond," lead author Peter Ma explained in a SETI Institute press release. "We believe that work like this will help accelerate the rate we're able to make discoveries in our grand effort to answer the question 'are we alone in the universe?'"

The new-age alien detective

Second author Dr Cherry Ng, also from the University of Toronto and an astronomer at the SETI Institute, added: "These results dramatically illustrate the power of applying modern machine learning and computer vision methods to data challenges in astronomy, resulting in both new detections and higher performance. Application of these techniques at scale will be transformational for radio technosignature science."

An interesting wrinkle in all of this is that the project almost never took place. It all began as Ma's high school project that wasn't well received by his teachers.

"With the help of artificial intelligence, I'm optimistic that we'll be able to better quantify the likelihood of the presence of extraterrestrial signals from other civilizations," Dr Ng commented in a University of Toronto press release. "With our new technique, combined with the next generation of telescopes, we hope that machine learning can take us from searching hundreds of stars, to searching millions."

"It's my belief — and indeed hope — that somewhere out there intelligent beings are waiting to be discovered," Michael Garrett, Director of Jodrell Bank Centre for Astrophysics at the University of Manchester, wrote in 'The Conversation'. "The AI revolution might be the missing ingredient that previous endeavours have lacked."

Keywords

aliens, extraterrestrial, machine learning, AI, artificial intelligence, signal, search for extraterrestrial intelligence, SETI, SETI Institute, telescope, star, technosignature

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